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VSP HOMOLOGIES

	1	5	10	15	20	25	30																								
VSP-b	R	S	S	E	V	K	G	A	S	F	R	E	A	V	E	A	H	N	I	R	A	E	K	I	P	E	E	C	V		
VSP-a	R	T	P	E	V	K	G	A	S	W	R	E	A	V	E	A	H	N	I	E	C	E	T	I	P	E	E	C	V		
T.phos					L	K	G	T	T	W	R	F	V	V	E	T	N	N	L	S	P	W	K	I	P	E	E	C	V		
Ph.vulg	S	D	T	E	V	R	C	A	S	W	R	E	A	V	E	A	Q	N	I	E	C	E	T	I	P	Q	Q	C	V		
Ar.VSP					P	N	C	R	S	W	H	E	G	F	E	T	S	N	M	I	N	E	E	T	V	P	A	N	C	K	
Ar.1A-1	S	I	N	Y	P	N	C	R	S	W	H	E	G	V	E	T	S	N	I	N	E	E	T	V	P	A	N	C	K		
Ar17A-1	S	I	N	Y	A	N	C	R	S	W	H	E	G	V	E	T	S	N	I	I	O	F	D	I	V	P	A	N	C	K	
	31	35	40	45	50	55																									
VSP-b	E	P	I	K	O	Y		I	N	G	E	O	F	R	S	E	S	K	I	V	N	O	O	A	F	E	Y	A	S	E	
VSP-a	E	A	I	K	E	Y		I	N	G	E	O	F	R	S	E	S	K	I	V	N	O	O	A	F	E	Y	A	R	D	
T.phos	D	Y	V	K	E	Y		M	V	S	P	G	Y	K	M	E	I	D	R	V	S	D	E	A	G	E	Y	A	K	S	
Ph.vulg	D	A	T	A	N	Y		I	E	G	G	O	Y	R	S	D	S	K	I	V	N	O	O	A	F	E	Y	A	R	D	
Ar.VSP	A	Y	V	E	D	Y		I	I	T	S	K	O	Y	O	Y	E	S	K	I	V	N	K	E	A	Y	F	Y	A	K	G
Ar.1A-1	A	Y	V	E	D	Y		I	I	T	S	K	O	Y	O	Y	E	S	K	I	V	N	K	E	A	Y	F	Y	A	K	G
Ar17A-1	D	Y	V	E	D	Y		I	I	T	S	K	O	Y	O	Y	E	S	K	I	V	K	E	A	Y	F	Y	A	K	G	
	60	65	70	75	80	85																									
VSP-b	R	E	V			H	H	N	D	I																					
VSP-a	L	E	V			H	P	K	D	T	E	V	S	I	D	N	T	V	L	S	N	I	P	Y	Y	K	K	H	C		
T.phos	V	D	I	G	D	D	G	R	E	V	W	I	F	D	V	D	E	T	L	S	N	L	P	Y	Y	S	D	H	R		
Ph.vulg	R	H	V			H	E	N	D	V	I	L	E	N	I	D	G	T	A	L	S	N	I	P	Y	Y	S	Q	H	G	
Ar.VSP	L	A	L	K	N	D	I	I	N	V	W	I	F	D	L	D	D	T	L	L	S	S	I	P	Y	Y	A	K	Y	G	
Ar.1A-1	L	A	L	K	N	D	I	I	N	V	W	I	F	D	L	D	D	T	L	L	S	S	I	P	Y	Y	A	K	Y	G	
Ar17A-1	L	A	L	K	N	D	I	I	N	V	W	I	F	D	L	D	D	T	L	L	S	S	I	P	Y	Y	A	K	Y	G	
	90	95	100	105	110	115																									
VSP-b	Y	G	V	E	E	N	E	T	L	Y	D	E	W	N	K	G	D		A	P	A	L	P	E	T	L	K	N			
VSP-a	Y	G	V	E	K	E	N	S	T	L	Y	D	E	W	N	K	G	N		A	P	A	L	P	E	T	L	K	N		
T.phos	Y	G	L	E	V	E	D	D	V	E	F	D	K	W	V	E	N	G	T		A	P	A	L	G	S	S	L	K	E	
Ph.vulg	Y	G	S	E	K	F	D	S	E	R	Y	D	E	E	F	V	N	K	G	E	A	P	A	L	P	E	T	L	K	N	
Ar.VSP	Y	G	T	E	N	I	A	A	G	A	Y	W	S	W	L	V	S	G	E		T	P	G	L	P	E	T	L	H	E	
Ar.1A-1	Y	G	T	E	N	I	A	A	G	A	Y	W	S	W	L	V	S	G	E	S	T	P	G	L	P	E	T	L	Y	E	
Ar17A-1	Y	G	T	E	K	T	D	P	G	A	Y	W	L	W	G	T	C	A	S	T	P	G	L	P	E	T	L	Y	E		

TO FIG. 1B.

FIG. 1A.

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FROM FIG. 1A.

	120	125	130	135	140	145
VSP-b	Y	N	K	E	S	I
VSP-a	Y	N	K	E	V	S
T.phos	Y	Q	E	V	I	K
Ph.vulg	Y	N	K	E	V	S
Ar.VSP	Y	N	K	E	V	S
Ar.1A-1	Y	N	K	E	V	S
Ar17A-1	Y	N	K	E	V	S
	150	155	160	165	170	175
VSP-b	K	A	G	E	H	T
VSP-a	K	A	G	E	H	T
T.phos	N	A	G	E	H	T
Ph.vulg	K	A	G	E	H	T
Ar.VSP	A	V	G	V	K	K
Ar.1A-1	A	V	G	V	K	K
Ar17A-1	A	V	G	V	K	K
	180	185	190	195	200	205
VSP-b	R	E	N	L	R	Q
VSP-a	R	E	N	L	R	Q
T.phos	R	N	A	M	V	E
Ph.vulg	R	A	K	E	V	Q
Ar.VSP	R	N	S	L	V	R
Ar.1A-1	R	N	S	L	V	R
Ar17A-1	R	N	S	L	V	R
	210	218				
VSP-b	R	T				
VSP-a	R	T				
T.phos	R	S				
Ph.vulg	R	S				
Ar.VSP	R	V				
Ar.1A-1	R	V				
Ar17A-1	R	V				

FIG. 1B.

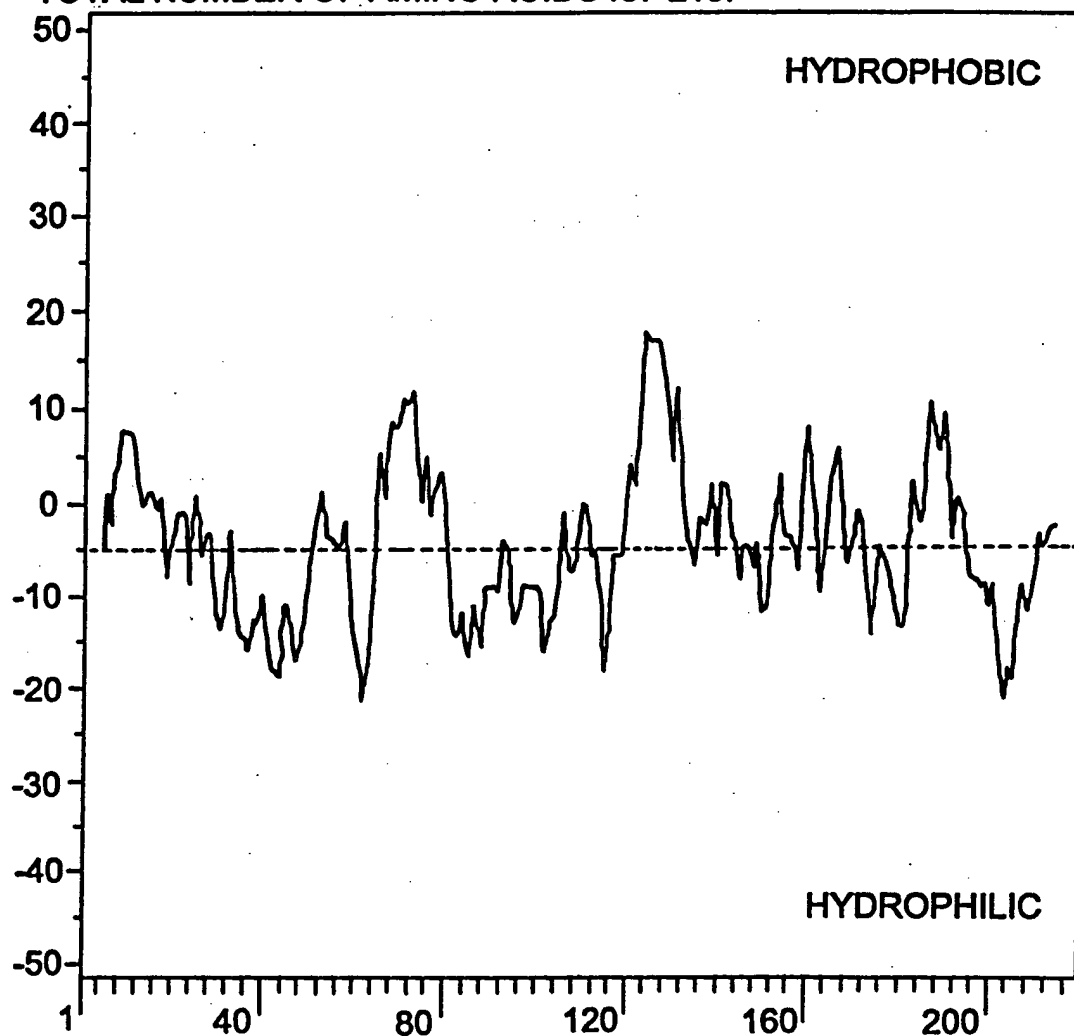
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PROPOSED VSP β METHIONINE-ENRICHED VARIANTS

	1	5	10	15	20	25	30																							
VSPβ	R	S	S	E	V	K	C	A	S	F	R	L	A	V	E	A	H	N	I	R	A	F	K	T	I	P	E	E	Q	V
VSPβ-Met10				M												M														M
VSPβ-Met20				M												M														M
VSPβ-Met30				M												M									M					M
	31	35	40	45	50	55	60																							
VSPβ	E	P	T	K	D	Y	I	N	G	E	Q	F	R	S	D	S	K	T	D	N	Q	Q	A	F	F	Y	A	S	E	R
VSPβ-Met10				M												M														M
VSPβ-Met20	M			M												M														M
VSPβ-Met30	M			M												M														M
	61	65	70	75	80	85	90																							
VSPβ	E	V	H	H	N	D	I	F	I	F	G	I	D	N	T	V	L	S	N	I	P	Y	Y	E	K	H	G	Y	G	V
VSPβ-Met10	M			M												M														
VSPβ-Met20	M	M	M													M														M
VSPβ-Met30	M	M	M													M														M
	91	95	100	105	110	115	120																							
VSPβ	E	E	F	N	E	T	L	Y	D	E	W	V	N	K	G	D	A	P	A	L	P	E	T	L	K	N	Y	N	K	L
VSPβ-Met10																														
VSPβ-Met20																														
VSPβ-Met30																														
	121	125	130	135	140	145	150																							
VSPβ	L	S	L	G	F	K	I	V	F	L	S	G	R	Y	L	D	K	M	A	V	T	E	A	N	L	K	K	A	G	F
VSPβ-Met10	M																													
VSPβ-Met20	M																													
VSPβ-Met30	M																													
	151	155	160	165	170	175	180																							
VSPβ	H	T	W	E	Q	L	I	L	K	D	P	H	L	I	T	P	N	A	L	S	Y	K	S	A	M	R	E	N	L	L
VSPβ-Met10																														
VSPβ-Met20																														
VSPβ-Met30																														
	181	185	190	195	200	205	210																							
VSPβ	R	Q	G	Y	R	I	V	G	I	I	G	D	Q	W	S	D	L	L	G	D	H	R	G	E	S	R	T	F	K	L
VSPβ-Met10																														
VSPβ-Met20																														
VSPβ-Met30																														
	211	215	218																											
VSPβ	P	N	P	M	Y	Y	I	E																						
VSPβ-Met10																														
VSPβ-Met20																														
VSPβ-Met30																														

FIG. 2.

**HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPB.
TOTAL NUMBER OF AMINO ACIDS IS: 218.**

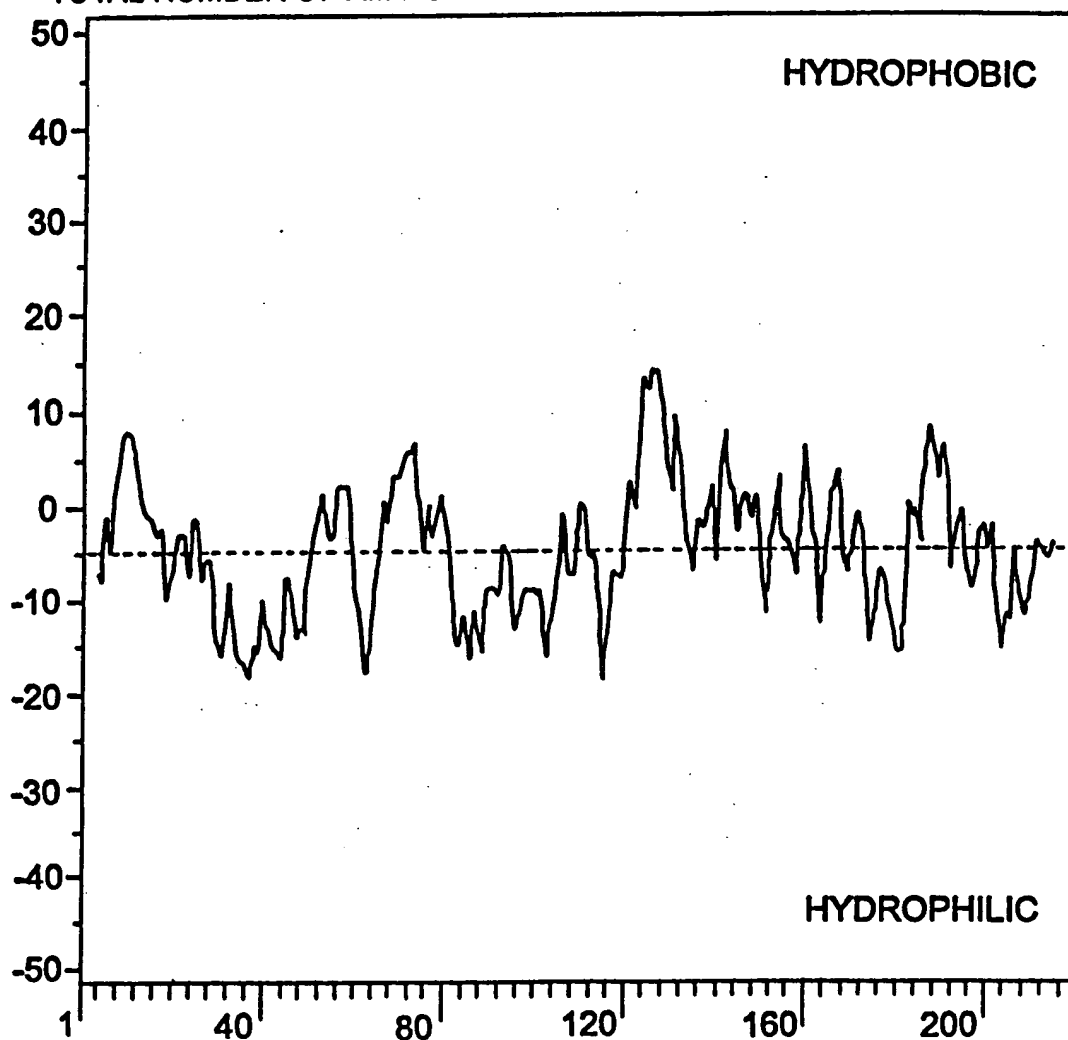


**HYDROPATHIC INDEX OF VSPB FROM AMINO ACID 1 TO AMINO ACID 218.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=-4.95).**

FIG. 3A.

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HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPM10.
TOTAL NUMBER OF AMINO ACIDS IS: 218

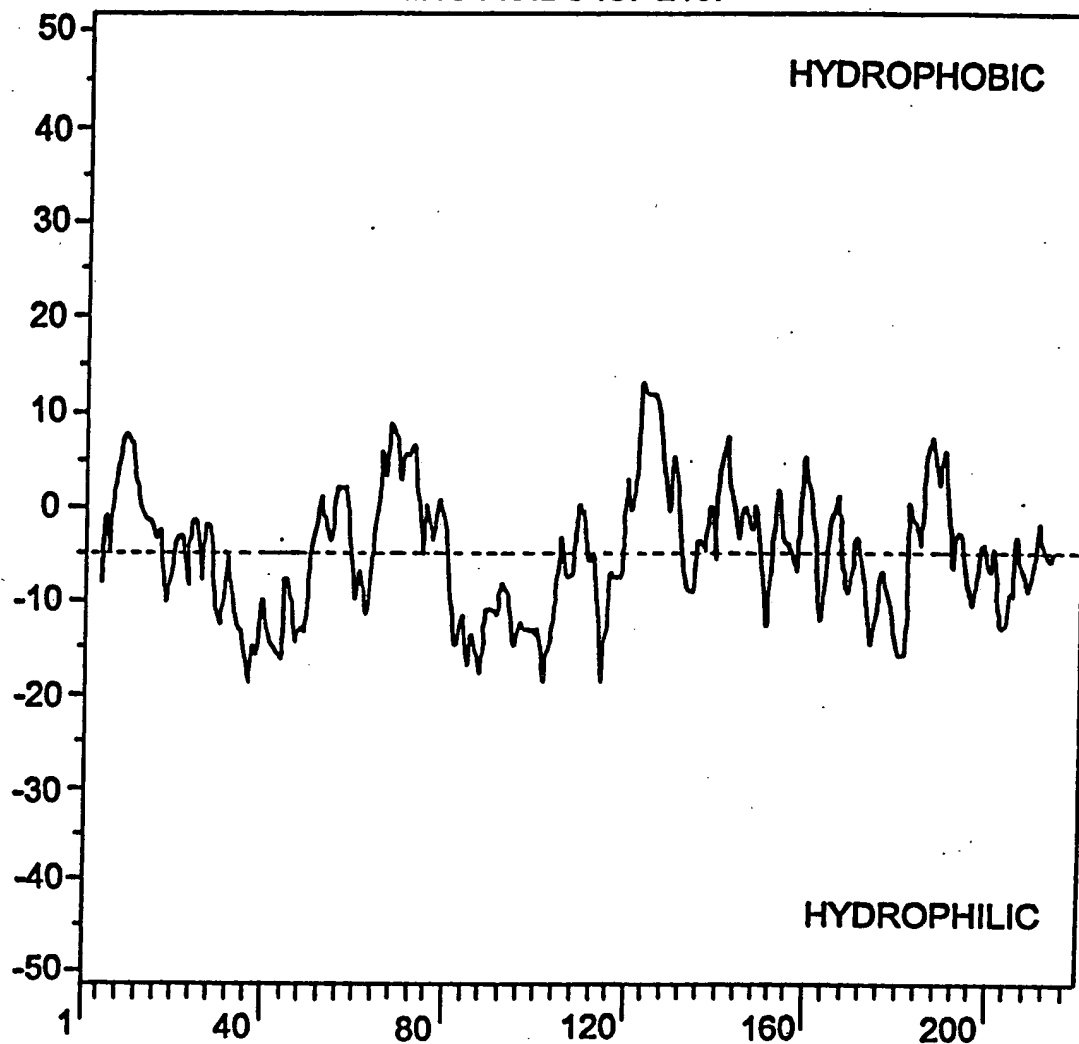


HYDROPATHIC INDEX OF VSPM1 FROM AMINO ACID 1 TO AMINO ACID 218.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=5.52).

FIG. 3B.

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HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPM20.
TOTAL NUMBER OF AMINO ACIDS IS: 218.

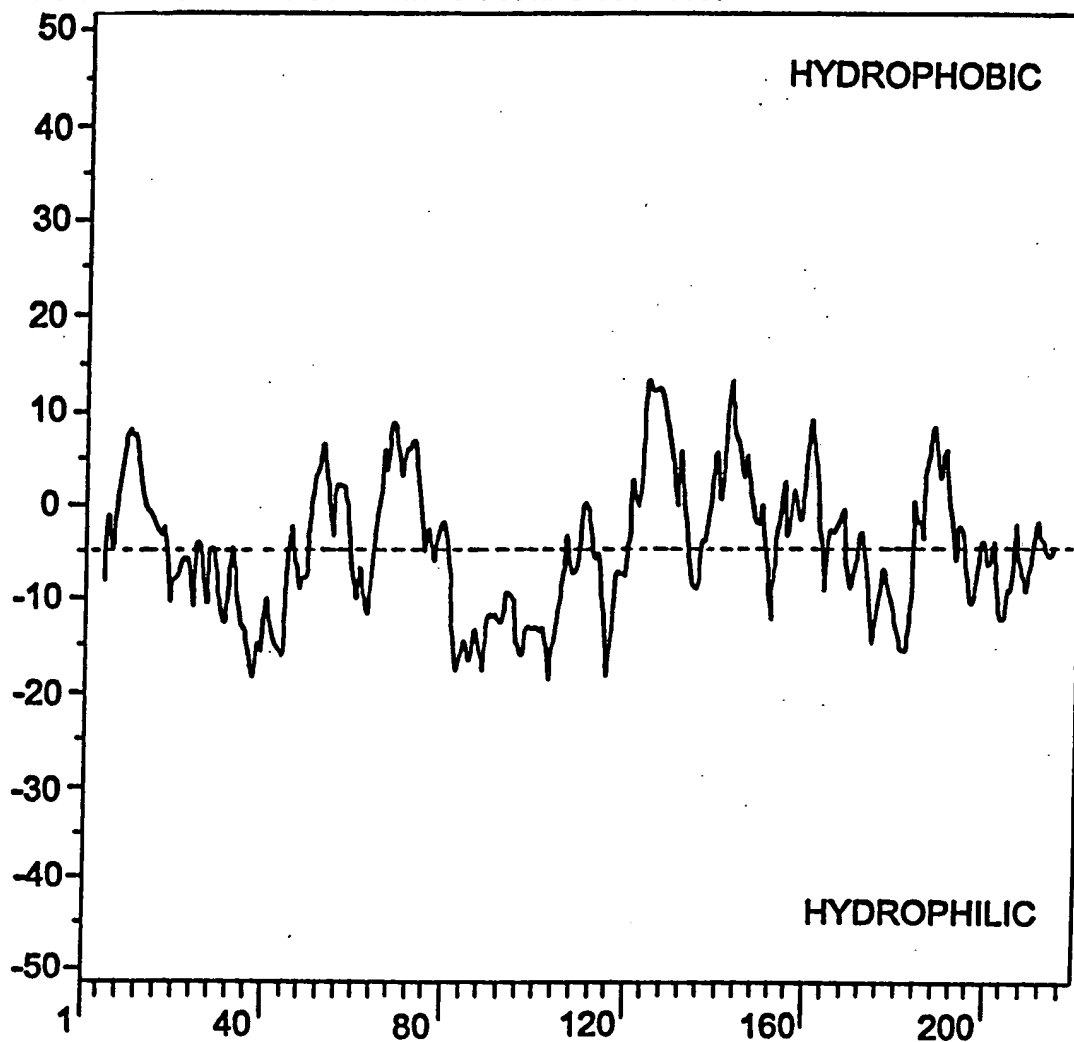


HYDROPATHIC INDEX OF VSPM20 FROM AMINO ACID 1 AMINO ACID 210.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=-5.68).

FIG. 3C.

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HYDROPATHY INDEX COMPUTATION FOR SEQUENCE VSPM30.
TOTAL NUMBER OF AMINO ACIDS IS: 218.



HYDROPATHIC INDEX OF VSPM30 FROM AMINO ACID 1 TO AMINO ACID 218.
COMPUTED USING AN INTERVAL OF 9 AMINO ACIDS. (GRAVY=-5.31).

FIG. 3D.

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VSP β -met10 sequence

SfiI

1	<u>GGCCCAGCCGCCAGATCTTCGGAGATGAAATGCGCTAGCTTTAGGCTTGCTGTGGAAGC</u>	60
	<u>CCGGGTCGGCCGGTCTAGAAGCCTCTACTTTACGCGATCGAAATCCGAACGACACCTTCG</u>	
61	<u>ACACAACATGCGAGCCTTTAAAAACCATTCTGAAGAGTGCATGGAACCAACAAAGGACTA</u>	120
	<u>TGTGTTGTACGCTCGGAAATTTTGGTAAGGACTTCTCACGTACCTTGTTGTTTCCTGAT</u>	
121	<u>CATGAATGGCGAACAATTTGGAATGGACTCTAAAAACAGTTAACCAACAGGCCTTCTTTTA</u>	180
	<u>GTACTTACCGCTTGTTAAAGCTTACCTGAGATTTTGTCAATTGGTTGTCGGAAGAAAAAT</u>	
181	<u>TGCTAGTGAAATGGAAATGCATCACAACGACATGTTTATATTCCGGCATGGATAACACCAT</u>	240
	<u>ACGATCACTTTACCTTTACGTAGTGTGCTGTACAAATATAAGCCGTACCTATTGTGGTA</u>	
241	<u>GCTCTCTAATATCCCATACTATGAAAAACATGGATATGGGGTGGAGGAATTTAATGAAAC</u>	300
	<u>CGAGAGATTATAGGGTATGATACTTTTTGTACCTATACCCACCTCCTTAAATTACTTTG</u>	
301	<u>CTTATATGATGAATGGGTAAACAAGGGCGACGCACCGCATTGCCAGAGACTCTTAAAAA</u>	360
	<u>GAATATACTACTTACCCAATTGTTCCCGCTGCGTGGCCGTAACGGTCTCTGAGAAATTTT</u>	
361	<u>TTACAACAAGCTGATGTCCTTTGGCTTCAAGATGGTATTCTTGTGTCAGGAAGGTACCTTGA</u>	420
	<u>AATGTTGTTGCGACTACAGGGAACCGAAGTTCTACCATAAGAACAGTCCCTTCCATGGAAC</u>	
421	<u>CAAAATGGCCGTAAACAGAAGCAAACCTAATGAAGGCTGGCTTCCACACATGGGAGCAGTT</u>	480
	<u>GTTTTACCGGCATTGTCCTTCGTTTGGATTACTTCCGACCGAAGGTGTGTACCCTCGTCAA</u>	
481	<u>AATTCTCAAGGATCCACATCTTATGACTCCAAATGCACCTTCATACAAATCAGCAATGAG</u>	540
	<u>TTAAGAGTTCCTAGGTGTAGAATACTGAGGTTTACGTGAAAGTATGTTTAGTCGTTACTC</u>	
541	<u>AGAGAATATGTTGAGGCAGGGATACAGAATTGTTGGAATGATTGGTGATCAATGGAGCGA</u>	600
	<u>TCTCTTATACAACTCCGTCCCTATGTCTTAACAACCTTACTAACCACCTAGTTACCTCGCT</u>	
601	<u>TCTGCTTGGAGACCACATGGGCGAATCTAGAACCCTTTAAGCTTCCTAATCCCATGTACTA</u>	660
	<u>AGACGAACCTCTGGTGTACCCGCTTAGATCTTGAAATTCGAAGGATTAGGGTACATGAT</u>	
661	<u>CATGGAGGCGGCCGC</u>	675
	<u>GTACCTCCGCCGGCG</u>	

NotI

Fig. 4

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COLONY LIFT ASSAY TO DETECT PROTEIN-PROTEIN INTERACTIONS

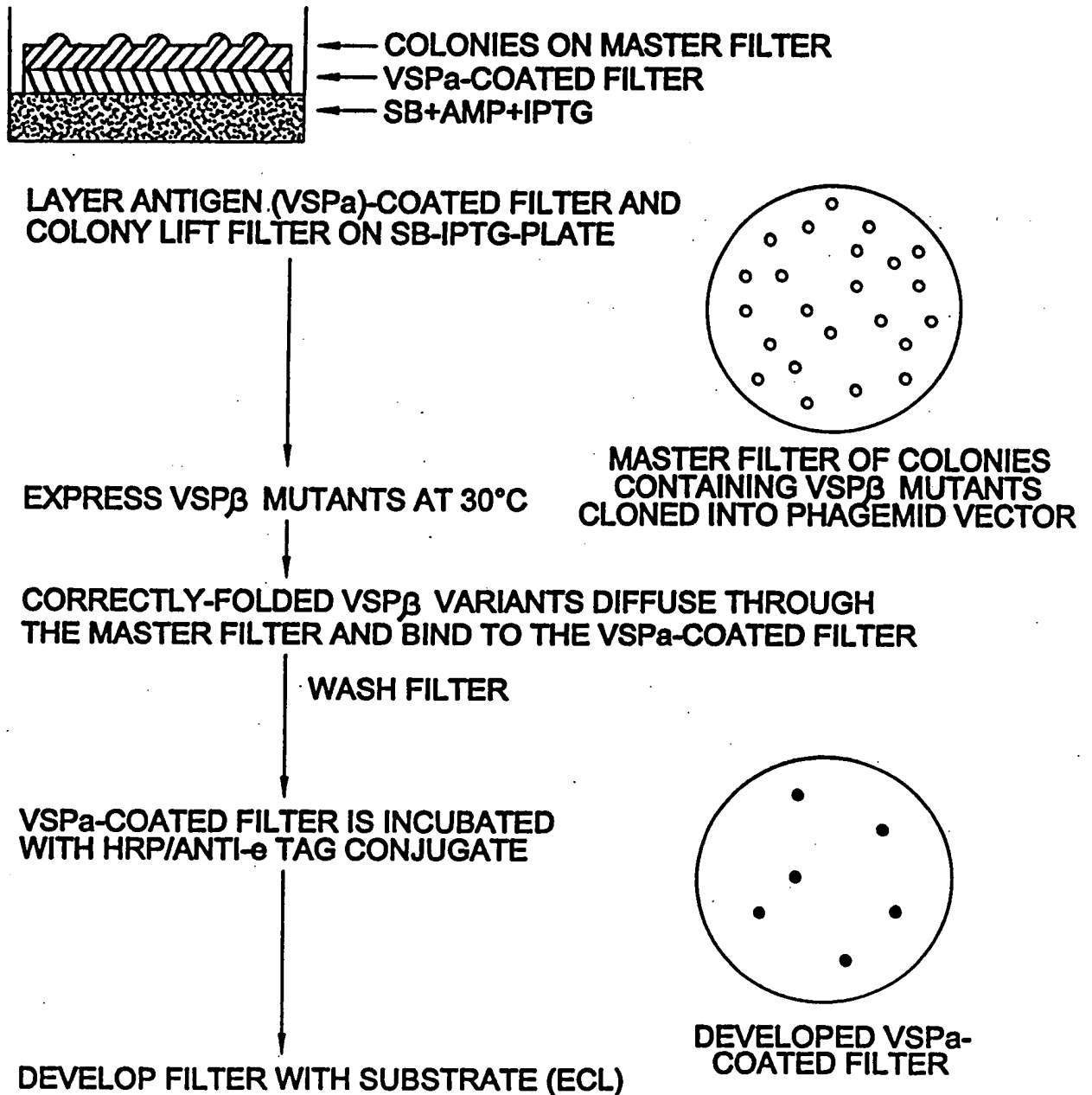


FIG. 5.